

Course Outcomes of M. Pharmacy (Pharmaceutical Quality Assurance)

First Year M. Pharmacy (SEM-I)

Course Name	MQA101T (Modern Pharmaceutical Analytical Techniques- Theory)	Year of Study	2022-23
	Students will be able to:		
MQA101T.1	Apply the basic theoretical principles of spectroscopic and hyphenated techniques in relation to drug analysis.		
MQA101T.2	Understand the principle of chromatographic instruments for separation, identification, and characterization of compounds and drugs.		
MQA101T.3	Explain Instrumentation and relate identification of compounds by electrophoresis technique and X-ray crystallography		
MQA101T.4	Summarize the various types of Thermal techniques like DSC, TGA, DTA and their applications.		
MQA101T.5	Execute the theoretical knowledge for analysis of various compounds and drugs in single and combination dosage forms		

Course Name	Quality Management System (MQA 102T)	Year of Study	2022-23
	Upon completion of course Students will be able to...		
MQA102T.1	Understand importance of quality and Quality Management System.		
MQA102T.2	Know about ISO management systems, Identify requirements of quality improvement programs.		
MQA102T.3	To build the knowledge and importance of quality in pharmaceutical industry		
MQA102T.4	To compare the ICH guidelines for determining stability of drug and drug substances.		
MQA102T.5	To make use of statistical approaches to maintain quality of drug and drug products.		

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Course Name	Quality Control and Quality Assurance (MQA103T)	Year of Study	2022-23
	Upon completion of course students will be able to...		
MQA103T.1	Understand the main attributes of quality assurance, responsibilities of QA & QC departments and interpret the regulatory aspects of GLP in pharmaceutical industry.		
MQA103T.2	To relate cGMP guidelines as per regulatory authority's requirements.		
MQA103T.3	To apply standard specification limits to pharmaceutical products as well as bulk drugs and understand store management.		
MQA103T.4	Frame documentary requirements needed at industrial level and learn process of document maintenance.		
MQA103T.5	Understand basic concepts of manufacturing operations as well as intellectual property rights		

Course Name	MQA104T – (Product Development and Technology Transfer)	Year of Study	2022-23
	Students will be able to...		
MQA104T.1	Understand the drug discovery and development process		
MQA104T.2	Know methods for analysis and characterization of drug and excipients during preformulation studies		
MQA104T.3	Gain knowledge about pilot plant scale up for solids, liquids, and parenteral dosage forms		
MQA104T.4	Understand various packaging requirements, selection and evaluation of packaging materials used and issues thereof		
MQA104T.5	Use the development of technology transfer from R&D to production, various models, and their documentation		

Course Name	Pharmaceutical Quality Assurance Practical I (MQA105P)	Year of Study	2022-23
	Upon completion of course students will be able to...		
MQA105P.1	Perform analysis of pharmaceutical compounds and formulations by different spectrometric techniques		
MQA105P.2	Perform analysis of raw materials, in-process materials, and finished products as per different pharmacopeia		
MQA105P.3	Illustrate Quality management principles through case studies, process capability study and stability studies for drug product and drug substances.		

Course Name	Seminar/ Assignment (MQA106S)	Year of Study	2022-23
	Student will be able to....		
MQA106S	Learn effective oral and written presentation, listening and discussion skills through the presentation aids as well as nonverbal communication		
MQA106S	Prepare a well-organized report employing elements of technical writing and critical thinking.		
MQA106S	Demonstrate the capability to explain, interpret and analyze technical issues and develop competence in presentation.		

First Year M. Pharmacy (SEM-II)

Course Name	MQA201T (Hazards & Safety Management)	Year of Study	2022-23
MQA201T.1	Understand basic knowledge about the environment, natural resource available and associated problems in pharmaceutical industry.		
MQA201T.2	Learn safety standards in pharmaceutical industry & applications of Air circulation system for sterile area, non-sterile area, and fire protection system.		
MQA201T.3	Gain comprehensive knowledge on the safety management & apply Control measures for chemical hazards. Regulatory aspects in chemical hazard.		
MQA201T.4	Perceive importance of industrial processes, potential hazards, regulatory aspects of safety and hazards control and approaches of preventive and protective management from various hazards.		
MQA201T.5	Explore concept of self-protective measures against workplace hazard, ICH guidelines on risk assessment and Risk management methods, elements of safety programme and safety management.		

Course Name	Pharmaceutical Validation (MQA202T)	Year of Study	2022-23
	students will be able to...		
MQA202T.1	Compare Qualification, Calibration and validation & apply it according to classification		
MQA202T.2	perform qualification of analytical and manufacturing equipments		
MQA202T.3	Gain knowledge on validation of Utilities and qualification of laboratory equipments		
MQA202T.4	Interpret Process validation process for various dosage forms and parameters of analytical method validation.		
MQA202T.5	Understand Intellectual Property Rights procedure and its types.		

Course Name	Audits and Regulatory Compliance (MQA203T)	Year of Study	2022-23
	Upon completion of course Students will able to...		
MQA203T.1	Interpret responsibilities to plan audit and classify deficiencies.		
MQA203T.2	Summarize Quality Systems approach and develop audit checklist.		
MQA203T.3	List aspects for audit of vendors and production departments		
MQA203T.4	Analyze manufacturing process and materials with respect to audit of microbiology laboratory audit.		
MQA203T.5	Evaluate maintenance of quality assurance through audit of critical utilities		

Course Name	MQA204T – (Pharmaceutical Manufacturing Technology)	Year of Study	2022-23
	Students will be able to...		
MQA204T.1	Understand the common practice followed in in plant layout, production planning and developments in the pharmaceutical industry		
MQA204T.2	Get familiar with the principles and practices of aseptic process technology, manufacturing, and process automation in industry		
MQA204T.3	Gain knowledge about advance non-sterile solid product manufacturing technology and coating technology		
MQA204T.4	Have a better understanding of containers and closures for pharmaceuticals		
MQA204T.5	Generate insights of implementation of Quality by design (QbD) and process analytical technology (PAT) for drug, excipients and formulations		

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Course Name	Pharmaceutical Quality Assurance Practical II (MQA205P)	Year of Study	2022-23
	Upon completion of course students will be able to...		
MQA205P.1	Perform experiments based on analysis of atmospheric and drug contaminants by various instrumental techniques		
MQA205P.2	Gain expertise on qualification and validation exercises		
MQA205P.3	Understand checklist items for various aspects of industrial audits and design of plant layout for various formulations		

Course Name	Seminar/ Assignment (MQA206S)	Year of Study	2022-23
	Student will be able to....		
MQA206S.1	Learn effective oral and written presentation, listening and discussion skills through the presentation aids as well as nonverbal communication		
MQA206S.2	Prepare a well-organized report employing elements of technical writing and critical thinking.		
MQA206S.3	Demonstrate the capability to explain, interpret and analyze technical issues and develop competence in presentation.		

M. Pharmacy SEM-III

Course Name	Research Methodology and Biostatistics (MRM301T)	Year of Study	2022-23
	Upon completion of course students will be able to...		
MRM301T.1	To understand the various aspects of research methodology and the use of biostatistics in research and development.		
MRM301T.2	To compare the various statistical techniques and their applications during research		
MRM301T.3	To select and perform the appropriate parametric/ nonparametric tests as per the data, manually as well as using statistical software models and tools.		
MRM301T.4	To elaborate with examples the ethics involved in medical and pharmaceutical research		
MRM301T.5	To relate and interpret the guidelines of CPCSEA for laboratory animal facilities and basic principles of medical research.		

Course Name	MJC302 (Journal Club)	Year of Study	2022-23
	Students will be able to.....		
MJC302 .1	Keep themselves abreast of new knowledge and generate awareness of current research findings		
MJC302.2	Develop analytical, interpreting abilities, problem-solving skills and utilize research in evidence-based practice		
MJC302.3	Improve debating skills and demonstrate leadership skills.		

Course Name	RPP303 (Discussion / Presentation (Proposal Presentation))	Year of Study	2022-23
RPP303.1	Support the chosen research area and discuss the acquired skills to prepare alternate protocols/outcomes in unexpected circumstances		
RPP303.2	Discuss novelty, ethical aspects, and environmental concerns as well as the drawbacks of the research project		
RPP303.3	Defend their research project effectively and confidently in front of the experts.		

Course Name	RWP304 (Research Work)	Year of Study	2022-23
RWP304.1	Review scientific literature for the research proposal and record evidence-based published work		
RWP304.2	Perform research independently by improving problem-solving capabilities and by understanding ethics in research.		
RWP304.3	Develop theoretical and practical skills by performing research-based experiments on different instruments and gain knowledge on the assimilation of data and scientific writing		

M. Pharmacy SEM-IV

Course Name	MJC401 (Journal Club)	Year of Study	2022-23
MJC401.1	Keep themselves abreast of new knowledge and generate awareness of current research findings		
MJC401.2	Develop analytical, interpreting abilities, problem-solving skills and utilize research in evidence-based practice		
MJC401.3	Improve debating skills and demonstrate leadership skills.		

Course Name	RWP402 (Research Work)	Year of Study	2022-23
RWP402.1	Review scientific literature for the research proposal and record evidence-based published work		
RWP402.2	Perform research independently by improving problem-solving capabilities and by understanding ethics in research.		
RWP402.3	Develop theoretical and practical skills by performing research-based experiments on different instruments and gain knowledge on the assimilation of data and scientific writing		

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Course Name	RPP403 (Discussion/Final Presentation)	Year of Study	2022-23
RPP403.1	Support the chosen research area and discuss the acquired skills to prepare alternate protocols/outcomes in unexpected circumstances		
RPP403.2	Discuss novelty, ethical aspects, and environmental concerns as well as the drawbacks of the research project		
RPP403.3	Defend their research project effectively and confidently in front of the experts.		